ASOS MODIFICATION NOTE 33 (for Electronics Technicians)
Engineering Division
W/OSO321:BGM/AJW

SUBJECT	:	ACU Memory Firmware Version 2.4 and ACU CPU Firmware 1.81
PURPOSE	:	Firmware for Meteorological Aviation Report (METAR).
EQUIPMENT AFFECTED	:	ASOS Acquisition Control Unit (AACU)
PARTS REQUIRED	:	CPU Microcircuit P/N 62828-45000 CPU Microcircuit P/N 62828-45001 ACU Memory Microcircuit P/N 62828-45002 ACU Memory Microcircuit P/N 62828-45003 ACU Memory Microcircuit P/N 62828-45004 ACU Memory Microcircuit P/N 62828-45005 RAM Chips P/N 62828-90036-1 (4 ea.) Label, ACU Memory Card Stuffing Chart Label, ACU
MOD PROCUREMENT:		The above parts are available through NLSC and are required at all commissioned sites. Appendix E identifies those sites requiring this modification before June 28, 1996. Technicians should order one set of CPU EPROMs, S100-1A2A1-U29 for each ACU CPU when upgrading to 1.81 (two sets per system). One set of ACU memory EPROMs, S100-1A2A3-U8B must be ordered for each site. Sites with ACU firmware version 2.2 or lower must order one S100-FMK059 (ACU memory upgrade) for each site. Return old EPROMs to NRC.
SPECIAL TOOLS REQUIRED	:	IC insertion tool Small flat blade screwdriver Conductive foam Electrostatic discharge (ESD) straps
TIME REQUIRED	:	1 hour. Additional time is required to incorporate other modifications
EFFECT ON OTHER INSTRUCTIONS	:	EHB-11, section 3.6, Modification Note 32, must be installed in conjunction with this modification. This modification note supersedes Modification Note 20, including errata, Modification Note 31 and Modification 14. Remove Modification Note 29, if installed, before starting this modification.
AUTHORIZATION	:	This modification is authorized by ECPs E96-SM05F164.
VERIFICATION STATEMENT	:	This modification has been tested for operational integrity at the sites listed in Appendix B and the Engineering Design Branch laboratory.

GENERAL

This modification note provides procedures to upgrade the ASOS software by removing and replacing erasable programmable read only memory (EPROM) and adding random access memory (RAM). This note provides procedures for "Before Installing Firmware" and "After Installing Firmware." Appendix C contains information on changes and corrections implemented in firmware version 2.4. Before installing Modification Note 33, reference EHB-11, section 3.6, ASOS Modification Notes 32. The voice processor firmware, Modification Note 32, is required to be installed in conjunction with this modification.

PROCEDURE

The following installation instructions are for EPROMs U8, U7, U17, and U21, RAM chips U46, U47, U52, U53 on the ACU memory board 1A2A3. Installation instructions are also for EPROMs U29 and U30 on the ACU CPU boards 1A2A1 and 1A2A2 when upgrading to version 1.81. The instructions also includes placement information for the ACU stuffing chart label and the ACU memory board part number label.

CAUTION

Be careful to protect the electronics on the ACU memory and CPU boards during this procedure. Do not reconfigure any jumpers on the ACU memory or the ACU CPU boards unless instructed to do so by the procedure.

BEFORE INSTALLING FIRMWARE

1. Call the AOMC at 1-800-242-8194 and provide notification on which ASOS you will be installing new firmware. Confirm that the AOMC will provide access to the site-specific data base. Coordinate with the AOMC that the data base is available. Upload the current configuration before installing the new firmware.

2. Get approval of the responsible MIC/OIC before starting installation. You may install on any day of the month if restrictions in steps 3 and 4 are satisfied.

3. **Commissioned Sites Only**: Do not start installation during bad weather, precipitation, instrument flight rule (IFR) conditions, or if any of these conditions are expected within 3 hours. The responsible MIC/OIC will define these meteorological conditions.

4. Do not start firmware installation at a time that will conflict with scheduled synoptic observations at 00, 03, 06, 09, 12, 15, 18, and 21Z. Although about 45 minutes should be sufficient, allow 1 hour to complete installation and restart ASOS.

5. Immediately before beginning work at NWS staffed sites, the MIC/OIC/ Observer will inform the tower and any other critical users that ASOS will be shut off for firmware upgrade. At an unstaffed site, the el tech will inform the tower using Controller Video Displays (CVD) and Operator Interface Devices (OID) to log off and shut down display power to avoid confusion.

Commissioned sites only are to download the following data to the laptop using the direct command mode: 5-minute data (12 hrs.), SYSLOG information (24 hrs.), SHEF messages (24 hrs.), and any 2-hour archive files. Forward collected data to the responsible DAPM.

6. Do not begin the installation process, i.e., halt ASOS, until immediately after an hourly observation has been transmitted. At NWS-staffed sites, normal backup observing procedures will be implemented.

7. Go into the AOMC page (REVUE-SITE-VERSN-AOMC); wait for the external communication and the site physical lines to change from "UPLOAD REQ" to "COMPLETE" before going to the next step. Disable all hardwire and dial communication ports to AFOS (REVUE-SITE-CONFG-COMMS). The system voice function will automatically broadcast a "not available" message when the ACU power is turned off.

8. Make the appropriate SYSLOG entries (MAINT-ACT-FMK) Mod 33

    1. Log on as **TECH**.
    2. Key the **MAINT** screen.
    3. Key the **ACT** page.
    4. Key **START** - Stop here and preform Mod 33.
       Upon completion of the Mod 33, log onto the system.

9. Mod Note 32 is required to be installed with this modification. Continue with Appendix A, Instructions for ASOS Software Version Upgrade. Once the steps in Appendix A have been completed, continue with "After Installing Firmware," step 10.

AFTER INSTALLING FIRMWARE

See page 4 for a description of the time required to reboot ASOS and sensor response time after a new firmware load.

10. When ASOS is restarted at unstaffed sites, call to inform towers using CVDs and OIDs to turn on their displays. (At staffed sites, the MIC/OIC observer will call the tower.)

11. If on-site NWS staff provides backup while the installation is underway, no special observation is needed when ASOS is restarted. Proceed to step 12.

    If there is no backup at a site and a record observation was missed during the installation, a special observation must be taken when ASOS is restarted. The el tech should take the following steps at the ASOS keyboard after installation:

    1. Press [SIGN].
    2. Type his/her initials and press [RETURN].
    3. Type the observer level password and press [RETURN].
    4. Press [GENOB].
    5. Press [SPECL].
    6. Press [EXIT].
    7. Press [SIGN].
    8. Type his/her initials again and press [RETURN].
    9. Press [RETURN] twice. This signs the "observer" off ASOS.
    10. Leave ASOS running.

    Note: The "observer" must sign off before the 5-minute edit time is up.

12. Inform the office staff that ASOS is again operational. If less than 25 minutes remain until the next hourly observation, augmentation of the ceiling may be required. It may be necessary to augment several elements or even the entire observation. The chart below indicates how long it takes after a startup for ASOS to report each observation element automatically.

Times Needed for Elements to be Reported Automatically

	Minimum	Maximum
Pressure	60 seconds	10 minutes
Precipitation Amount	60 seconds	*
Wind direction	2 minutes	7 minutes
Wind speed	2 minutes	7 minutes
Precipitation Type	2 minutes	*
Temperature	5 minutes	10 minutes
Dew Point	5 minutes	10 minutes
Visibility	10 minutes	15 minutes
Obstruction to Visibility	10 minutes	*
Ceiling	30 minutes	35 minutes

* Maximum time not applicable since phenomena may not be present. Minimum time applies if phenomena are present.

13. Verify that ASOS transmitted an hourly observation. Call the AOMC at 1-800-242-8194 and tell the operator:

    1. Your location;
    2. That installation of the new firmware has been completed;
    3. That ASOS is operational.

14. Enter in the SYSLOG that maintenance has been completed.

    1. Key the **MAINT** screen.
    2. Key the **ACT** page.
    3. Key **FMK** - Enter the Field Mod Kit (FMK) number as follows: **Mod 33**.
       On the second line of the screen verify that only **Mod** 33 is displayed. Complete by entering **Y** in the Y/N if only **Mod** 33 is displayed. If mods 33 and 32 were completed, make appropriate log entries.
    4. Check the **SYSLOG** and verify the **FMK** message. **Enter a comment in the SYSLOG stating that version 2.4 has been installed. Notify the AOMC via telephone that Mod 33, version 2.4 and any other Mods have been completed.**

15. At an expansion site with ATCT, the el tech will contact the ATCT and supply information on the following:

    1. ASOS maintenance is completed.
    2. ASOS is restored to service.
    3. Tower CVDs and OIDs need to be turned on, and TRACON displays need to be turned on.

Reporting Modification

Target date for completion of this modification is **prior to June 28, 1996**. Target date for other sites is 30 days after receipt of parts. Report completed modification on a Weather Service Form A-26 maintenance record, per instructions in EHB-4, Part 2, Appendix F, using reporting code AACU. **Add in the comment field that version 2.4 was installed.** If this modification is installed in conjunction with Modification Note 32, a separate Weather Service Form A-26 must be completed for each modification note.

Also, record the modification number in block 17 (A) as 33 (see Appendix D for a completed sample of WS Form A-26).

NOTE:
Parts removed (EPROMs) should be properly packed and returned to NRC as S100-FMK015D.OLD. NRC will be reprogramming the EPROMs for other ASOS applications.

Acting Chief, Engineering Division

Appendix A
Appendix B
Appendix C
Appendix D
Appendix E

W/OSO321:AJWissman:3/26/96:sol:"MOD33.H11" on disk EHB11-J and on K: spelled:redone 4/3/96:rz:redone 4/24/96:rz

INSTRUCTIONS

FIELD MODIFICATION KIT - ASOS SOFTWARE VERSION UPGRADE

1. UPGRADING ASOS SOFTWARE

1.1 GENERAL

All ASOS application software is contained on the four erasable programmable read only memory (EPROM) integrated circuits (IC) on ACU memory board 1A2A3. Figure 1 illustrates the ACU memory board and identifies the four EPROMs (U8, U17, U7, and U21). The EPROMs are 32-pin dual in-line package (DIP) CMOS devices, each providing 512K x 8 bits of storage. Upgrading ASOS software requires only replacing the four EPROMs on the ACU memory board with higher revision level ICs.

Figure 1 also identifies the four additional RAM chips (U46, U47, U52 and U53). The RAM chips are 32-pin DIP CMOS devices, each providing 128K x 8 bits of storage. There will be no jumpers or switch setting changes to the board. **One RAM chip is added to the top of the clock socket/chip (U52). This causes the chip to protrude into the next card slot position.**

The four EPROMs on the ACU memory board contain both the ACU application program and the DCP application program. The ACU CPU runs the ACU application program directly from the ACU memory board. The DCP application program must first be downloaded from the ACU memory board to RAM storage in the DCP before it can be run by the DCP CPU.

All ASOS operating software is contained on two EPROM ICs on each ACU CPU board lA2Al and lA2A2. Figure 2 illustrates the ACU CPU board and identifies the two EPROMs (U29 and U30). The EPROMs are 28-pin DIP CMOS devices, each providing 256K x 8 bits of storage. Upgrading pSOS ASOS software requires only replacing the two EPROMs on each ACU CPU board with higher revision level Ics.

Sites without a local OID (i.e., no RS232 connected for the primary OID) should attach a terminal to the primary OID port of the ACU 1A9J22 before proceeding.

1.2 SOFTWARE UPGRADE PROCEDURE

This procedure provides instructions to upgrade ASOS software by removing and replacing the four EPROMs and adding four RAM chips on the ACU memory board. This procedure also provides instructions to upgrade two EPROMs on each of the ACU CPU boards to version 1.81. After new EPROMs are installed, this procedure cold starts both the ACU and associated DCPs.

If the ACU EPROMs in the system are 1.70 or higher, the ACU is no longer cold started by removing battery jumper J22 (Figure 1) to clear all RAM on the board. The next step requires receiving a download of site-specific data from the AOMC. The DCPs are cold started by performing a hard reset of each DCP from the processor status page on the OID. After completion of the upgrade procedure, the EPROMs removed from the ACU memory board should be packaged in appropriate electrostatic discharge (ESD) protective material for return to NRC.

NOTE:

There may be an approximate 20-minute wait required to access the AOMC.

Step

1. If the printer is on-line, place it off-line by pressing the **ON-LINE** switch located on the printer front panel.

CAUTION

Damage to equipment may result if power is not removed prior to removal or installation. Ensure that OUTPUT POWER switch is set to 0 (**OFF**) and facility power is removed.

To avoid damage to circuit boards and integrated circuits, use proper ESD handling procedures, including using a grounding strap when performing the following steps.

2. Set OUTPUT POWER switch on UPS status panel to the 0 (**OFF**) position. The indicator for the OUTPUT status panel extinguishes. (This step is only required on systems with a UPS).

3. Remove facility AC power from ACU cabinet.

4. Using a small flat blade screwdriver, loosen the captive screws located at top and bottom of ACU memory board 1A2A3. Loosen captive screws located at top and bottom of the ACU CPU boards 1A2A1 and 1A2A2 if ACU CPU firmware has not been upgraded to version 1.81.

5. Press extractor handles at top and bottom of ACU CPU boards 1A2A1, 1A2A2 if required and ACU memory board 1A2A3 in opposite directions to release board. Remove board from rack.

6. On the underside of the ACU memory board, using a flat blade screwdriver, remove three screws and flat washers securing front panel to board. Remove board from front panel.

7. If the ACU EPROMs in the system are 1.70 or higher proceed to step 8, otherwise continue with step 7. Remove battery jumper J22 from ACU memory card. The jumper will be reinstalled during the installation procedure.

CAUTION

Throughout this procedure, discharge the screwdriver before and during use by touching tool to the grounded chassis surface. Failure to comply may result in damage to the integrated circuits.

8. From the front of the board, slide small flat blade screwdriver between integrated circuit U7 and its IC socket. Carefully lift up on U7 to remove it from the socket as evenly as possible. After U7 is removed from the socket, place in a conductive foam or on some other static-free surface.

9. Repeat Step 8 for removal of the following integrated circuits U8, U17 and U21.

10. If required, remove U29 and U30 from the ACU CPU printed circuit boards 1A2A1 and 1A2A2 sockets and place the removed integrated circuits in a conductive foam or on some other static-free surface.

CAUTION

The ACU memory board has a battery that keeps voltage on the RAM sockets. **DO NOT** use a metal insertion tool when installing the RAM ICs. Avoid shorting out the voltage and ground pins. Shorting out the voltage pin will corrupt any stored data and is similar to performing a cold boot.

11. Using the IC insertion tool, remove the new EPROM ICs from protective packaging and insert them into the ACU memory board sockets in accordance with the following chart. Ensure that the EPROMs are installed with pin 1 (as identified by notch in top of IC) oriented toward board connector P1 and P2 as shown on Figure 1.

IC socket	IC part number
U8	62828-45002-1
U17	62828-45003-1
U7	62828-45004-1
U21	62828-45005-1

12. Step 12 and 13 can be skipped if ACU memory version 2.23 or later has been installed. Using the IC insertion tool, remove the RAM ICs from protective packaging and insert them into the ACU memory board sockets U46, U47, U52 and U53. Ensure that the RAMs are installed with pin 1 (as identified by notch in top of IC) oriented toward board connector P1 and P2 as shown on Figure 1. U52 already has a clock chip installed. **DO NOT REMOVE THE CLOCK CHIP.** Install the RAM chip on top of the clock chip.

13. Remove the part number label (ASSY 62828-47008-10) from the ACU memory card and install the new label (ASSY 62828-47008-20) in the same location.

14. Use a small flat blade screwdriver, and install the three flat washers and screws. This will secure the front panel to the board.

15. With the RAM chip stacked on top of the clock chip, the RAM chip protrudes into the next card slot. Remove the board or blank panel in VME slot 1A2A4.

16. Hold the ACU memory board by handles, position the board with the component side facing to the right and carefully slide board into VME slot 1A2A3. Align the board with the rear connector and press into place. Reinstall the 1A2A4 board or blank panel.

17. Use a small flat blade screwdriver and tighten the captive screws located at top and bottom of boards and blank panels.

18. If required, remove the new EPROM ICs from the protective packaging. Use an IC insertion tool to insert the EPROMs into the ACU CPU board's sockets (1A2A1 and 1A2A2) in accordance with the following chart. Ensure that all the EPROMs are installed with pin 1 (as identified by notch in top of IC) oriented toward the top of the ACU CPU board as shown on Figure 2.

IC socket	IC part number
U29	62828-45000-1
U30	62828-45001-1

19. If required, hold the ACU CPU board by the handles, position the board with the component side facing to the right and carefully slide board into the card rack on its guides. Align the board with the rear connector and press into place.

20. If required, use a small flat blade screwdriver, and tighten the captive screws located at the top and bottom of the ACU CPU board.

21. Install the stuffing chart label directly over the stuffing chart located on the inside of ACU back door. Center the stuffing chart label over the ACU memory board section of the chart.

22. This completes Modification Note 33. If the voice firmware is 2.0 or lower, complete Modification Note 32 before going to step 23.

23. Apply facility power to ACU cabinet. Set OUTPUT POWER switch to 1 **(ON**) position. (This step is not required for systems that do not have a UPS).

24. After the power is applied to the ACU, one of the PASS (Green) LEDs on the CPU should illuminate and the PASS LED on the other CPU will remain off. After approximately 1 minute, the LED that was off should start blinking.

25. Place the line printer on-line by pressing the **ON-LINE** switch located on the printer front panel. The **ON-LINE** indicator illuminates.

26. With the power applied to the ACU and OID and after a brief warmup delay, the OID displays 1-minute data. If the display is not being updated, press the HELP key twice to refresh screen. The NEED SID AND AOMC PHONE message appears at top of screen. If this does not occur, return to REMOVAL procedure, step 1. Follow the steps until the ACU memory board is removed. Ensure the ACU EPROMs are installed correctly. Follow the INSTALLATION procedures to replace the ACU memory board.

27. At the OID, sign onto system as a "Technician." Note: Passwords are reset to the default values.

28. Display the external communications page on the OID (sequentially press REVUE-SITE-CONFG-EXTRN keys from 1-minute display). Enter both AOMC phone numbers (1-800-253-4717 & 1-800-434-1133) into the AOMC PHONE NUMBER field and press the EXIT function key.

29. Display the site physical page on the OID (sequentially press REVUE-SITE-PHYS function keys from 1-minute display). Enter the three or four character SID code in the STATION IDENTIFIER field and press the EXIT function key. The system then calls the AOMC and receives a download of site-specific data.

30. Display the AOMC version page on the OID (sequentially press REVUE-SITE-VERSN-AOMC function keys from 1-minute display). This will allow you to observe that all the files are being downloaded from the AOMC. All status fields should read "COMPLETE" in approximately 5 minutes. Press EXIT.

NOTE: The following steps cold start the DCPs.

31. Display the maintenance page on the OID (press the MAINT function key from 1-minute display).

32. Use the PREV/NEXT keys, position the cursor over PROC field and press the SEL key. The OID displays the processor status page.

33. Use the PREV/NEXT keys, position the cursor over DCP #1 - HARD field and press the RESET key. Respond "YES" and "ENTER" to the "ARE YOU SURE?" message. The corresponding status field displays INITIALIZING while the unit is initializing. The progress of the download can be monitored by the PERCENT COMPLETE message that appears at the top of the screen. When the percent complete reaches 100, the DCP status field changes to RUNNING in a single DCP configuration..

34. If the system contains more than one DCP, repeat step 31 for DCPs #2 and #3 as required. Once all the DCPs have been downloaded 100 percent, the DCP status field will change to RUNNING.

FINAL ACTIONS

1. After the Mod has been completed, clear any maintenance flags that occur as a result of the restart.

2. Display the SW version page on the OID (sequentially press REVUE-SITE-VERSN-SW function keys from 1-minute display). The following fields should display version 2.4: MEMORY ACU APPLICATION EPROM, MEMORY DCP APPLICATION EPROM, and MEMORY DCP APPLICATION RAM. PSOS field should display “CPU A PSOS OS EPROM 1.81" and “CPU B PSOS OS EPROM 1.81" (These fields may take 5-10 minutes before they all read 2.4.)

3. When upgrading from ACU firmware 2.2 or later this step is not required. El Techs should enter site identifications for each AFOS dial backup telephone number. SHEF addresses must be entered on the external communications page. Specific addresses can be obtained from the local MIC/OIC. AFOS backup block and the AOMC 1200 baud fields should be **N**, for all sites in the CONUS.

4. ***With the installation of firmware 2.4, the freezing rain sensor must be configured if installed in accordance with the ASOS site technical manual S100, chapter 1, paragraph 1.3.10.3, table 1.3.2.1.***

5. Sites with GTA radios should be configured in accordance with the ASOS site technical manual S100, chapter 12, paragraph 12.4.5.1.

6. Sites with multiple DCPs must change the second and third DCP locations to include “RWY” for runway designator. Go to (REVUE-SITE-CONFG-SENSR-ALGOR-CHANG) and modify the location field. Actual runway values (i.e., 110, 140, etc.) should be obtained from site survey and verified with the systems manager.

7. Upload site configuration to the AOMC. Go into the AOMC page (REVUE-SITE-VERSN-AOMC) wait for all the lines to change from “UPLOAD REQ” to “COMPLETE.”

ASSEMBLY DRAWING

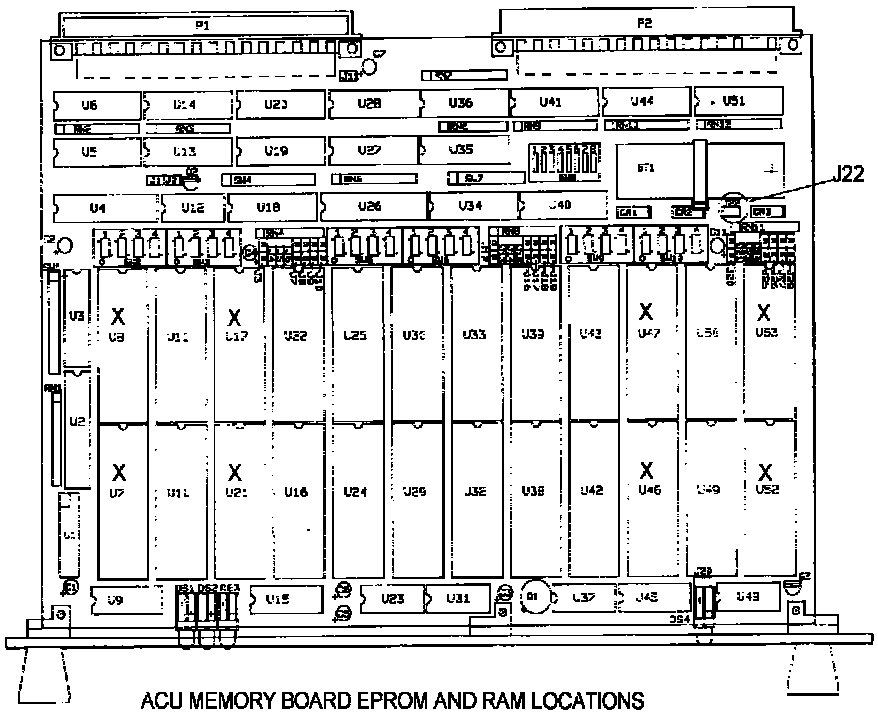

FIGURE 1

EPROM	RAM
U7	U46
U8	U47
U17	U52
U21	U53

ASSEMBLY DRAWING

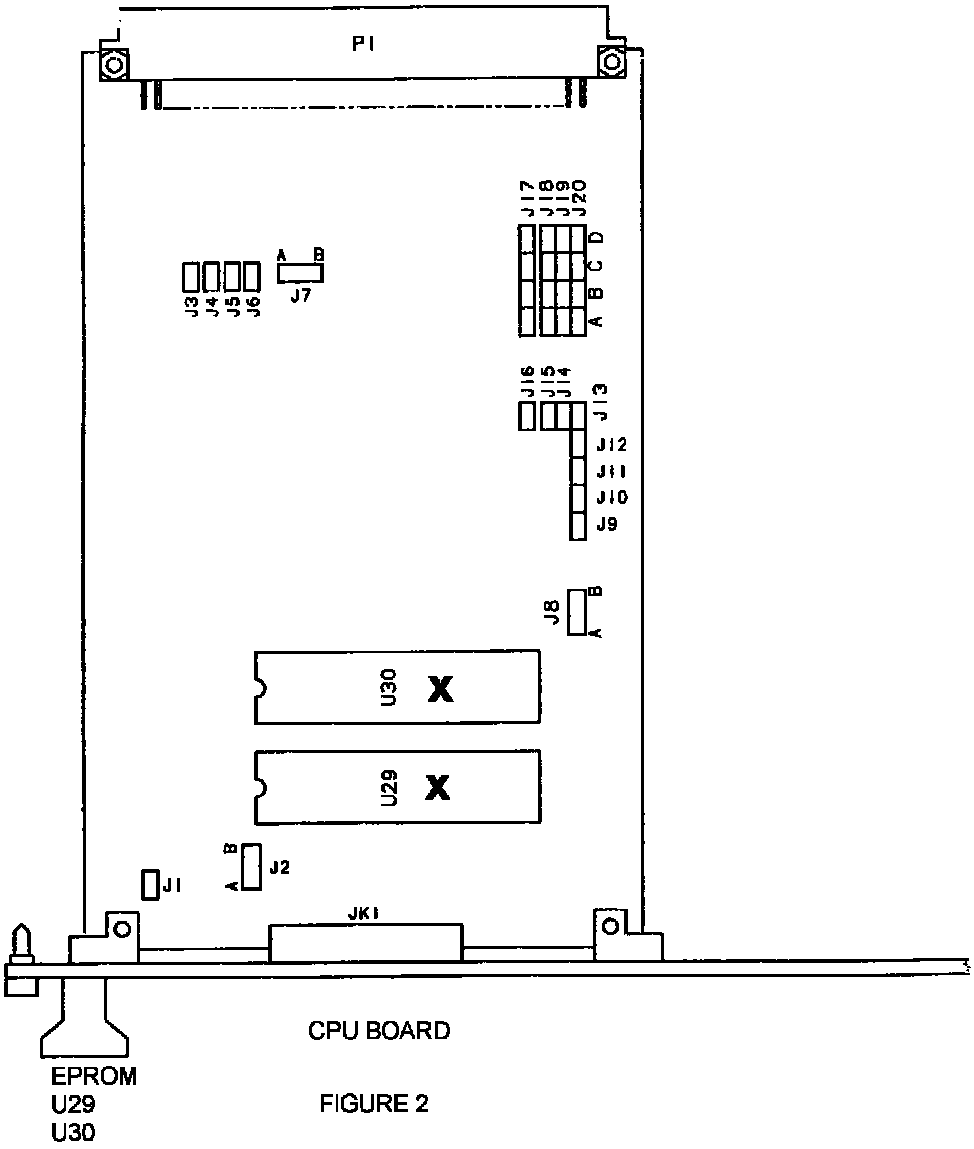

FIGURE 2

The test sites for version 2.4 are:

ANC	ANCHORAGE	- T \		
LBF			NORTH PLATTE	- S \C
STP			ST PAUL	- T \TBC
BIS			BISMARCK	- T \TBC
FAR			FARGO	- T \C
EVV			EVANSVILLE	- T \C
IND			INDIANAPOLIS	- T \TBC
CON			CONCORD	- S \
FVE			FRENCHVILLE	- S \CM
HSE	HATTERAS	- S/C		
OFP			RICHMOND	- S \C
RIC	RICHMOND	- T \C		
OKC			OKLAHOMA CITY	- T \C
AHN			ATHENS	- S \C
FSM			FORT SMITH	- T \C
TRI			BRISTOL/JOHNSON/KINGSPORT	- T \C
TYS			KNOXVILLE	- T \C
CHA			CHATTANOOGA	- T \C
3R5			NEW BRAUNFELS	- S \TBC
AST			ASTORIA	- S \C
SLC			SALT LAKE CITY	- H
SFO			SAN FRANCISCO	- H \TBC
ABQ			ALBUQUERQUE	- T \TBC
TAN			TAUNTON	- S \
GLD			GOODLAND	- S \C
HLC			HILL CITY	- S \TBC
MKE			MILWAUKEE	- H \C
MIA			MIAMI	- H \TBC

Operational Trouble Reports (OTR) Fixed in V2.4

This appendix is a subsection of the Software release note published by the Field Systems Branch, OSO13. The software release note describing the detail changes to ASOS software version 2.4 is available from Frank Lucadamo, 301-713-0386, ext.186, and should be read by all technicians. Electronic distributions are also available.

Other changes which affect the electronics technician are described below.

New Algorithms

ITEM	TITLE/COMMENTS	PROBLEM	SOLUTION
1	Snow intensity modifications	Snow intensity from LEDWI was not modified by the visibility in ASOS.	Snow intensity from the LEDWI is now modified correctly for visibilities less than 1 mile.
2	Invalid peak wind remark	An invalid peak wind remark was generated in SAO Mode: PK WND MM35/1902. A missing direction and valid wind speed should not be encoded together.	When a missing wind direction or missing wind speed is encountered, the peak wind remark is not generated.

Other Changes

System Changes

A minor change in format is found in the 1-minute OID screen. Station pressure, pressure altitude, and density altitude no longer have a blank line separating them. This is highlighted in the following example where output from version 2.4 is compared to version 2.3.

```
21:14:37 01/26/96 0214Z                              SILVER SPRING METRO CENTER 2
    +)))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))),
*  SKY        = OVC019                                                         *
*                                                                             *
*  VISIBILITY = 10SM    TWR = M1/4SM    TEMP/DEWPT   = 3.3  /1.1   C  38 /34  F*
*                                       WIND DIR/SPD = 110/11                 *
** PRESENT WX =                         ALTIMETER    = 30.33                  *
*                                                                             *
*  REMARKS    = RMK AO2 SFC VIS 10 PNO                                        *
*                                                                             *
*                                                                             *
*SPECI      270212Z 11012KT 2SM OVC019 03/01 A3034 RMK AO2 SFC VIS 10 PNO $    *
*                                                                             *
*                                                                             *
*                                                                             *
*                                                                             *
*                                                                             *
 * MAG WIND DIR/SPD:  120/11                                  +)))))0)))))0)))))1
*                                                                  *PRINT*GENOB* CMD *
 * RELATIVE HUMIDITY: 85           STATION PRESSURE:  29.88    /)))))3)))))3)))))1
*                                 PRESSURE ALTITUDE:  150     *REVUE* TWR *     *
 * SEA LVL PRESSURE:  1042.1      DENSITY ALTITUDE:  -1100    /)))))3)))))3)))))1
*                                                                  *SIGN *EDIT * AUX *
    .)))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))2)))))2)))))2)))))-
            Note:  Observer's 1-minute screen software version 2.40.

15:26:24 02/29/96 2026Z                              SILVER SPRING METRO CENTER 2
    +)))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))),
*  SKY        = MM                                                             *
*                                                                             *
*  VISIBILITY = 10+                     TEMP/DEWPT   = 0.6  /-12.8 C  34 /09  F*
*                                       WIND DIR/SPD = 000/00                 *
*  PRESENT WX = S-                      ALTIMETER    = 30.06                  *
*                                                                             *
*  REMARKS    =                                                               *
*                                                                             *
*                                                                             *
*SP1 SP 2024 AO2A MM 5S- M/34/09/0000/007/ PCPN 0000                          *
*                                                                             *
*                                                                             *
*                                                                             *
*                                                                             *
*                                                                             *
 * MAG WIND DIR/SPD:  000/00        STATION PRESSURE:  29.59  +)))))0)))))0)))))1
*                                                                  *PRINT*GENOB*CMD  *
 * RELATIVE HUMIDITY: 36            PRESSURE ALTITUDE:  -30    /)))))3)))))3)))))1
*                                                                  *REVUE* TWR *     *
 * SEA LVL PRESSURE:  M             DENSITY ALTITUDE:  -1600   /)))))3)))))3)))))1
*                                                                  *SIGN *EDIT * AUX *
    .)))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))2)))))2)))))2)))))-
                          Note:  Software Version 2.30.
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The rest of the system changes are found in the table below.

ITEM	TITLE/COMMENTS	PROBLEM	SOLUTION
1	Printer paper conservation	Printer paper was being wasted when the user-requested prints were generated. A form feed was inserted after every user-requested print.	The extra form feed after the user-requested print has been removed. The amount of paper wasted will be minimized.
2	Invalid COR in AFOS message header.	This problem appeared in version 2.30 for some ASOS to ASOS sites with remote connectivity via dial-in, PACE, peripheral sharing device, or remote dial around for hardwired connection.	The AFOS header only contains "COR" under the appropriate circumstances.
3	METAR time and date activation.	METAR implementation date changed to July 1, 1996 at 0800 UTC.	Changed to July 1, 1996 at 0800 UTC.
4	When COR is issued, the WMO Header contains an incorrect date between 0000 UTC and midnight LST.	The ASOS/AFOS interface incorrectly assigns an LST date and UTC time for the effected period. The date should be in UTC.	ASOS firmware was modified to convert LST date and time to UTC date and time.
5	Wrong year reported in 5-minute observation	After a warm boot, the system year was initialized as "1992" until the AOMC was accessed to synchronize the clock.	The correct date now appears on the 5-minute observations after a warm boot.

ITEM	TITLE/COMMENTS	PROBLEM	SOLUTION
6	Warm start problems occurred with: A: UTC dates B: Remote DAILY command.	A: Remote terminal login using direct command mode (DCM) and UTC times causes a warm reboot. B: For software version 2.3 warmstarts occurred when DAILY information was requested from a remote terminal.	A: Problem was fixed by having the firmware correctly converts the UTC date/time to LST. B: Fixed by having the firmware check the appropriate file.

Changes that Affect the System Manager

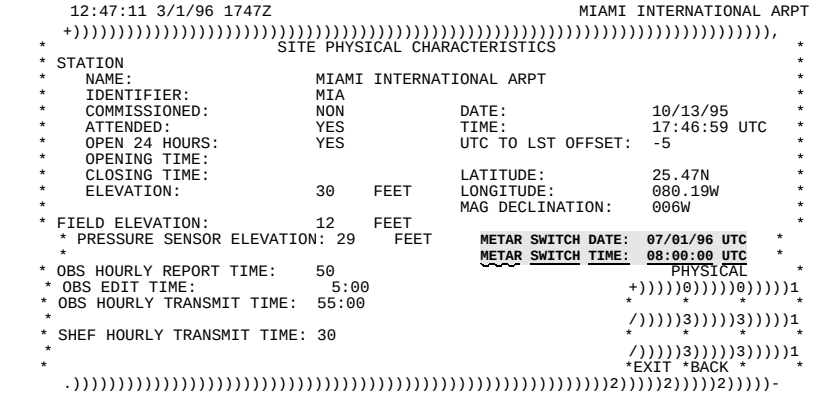
With the exception of the changes in the site physical characteristics page, the following table contains the software modification that affects the system manager (SYS) password level.

ITEM	TITLE/COMMENTS	PROBLEM	SOLUTION
1	Runway designation modifications	New METAR FMH requirements specify the abbreviation for runway as "RWY."	ASOS now allows both "RY" and "RWY" as runway designators.

Site Physical Characteristics

The site physical characteristics page (see screen on the next page) can be obtained by entering the following commands from the 1-minute screen: REVUE-SITE-PHYS. On this page, the date and time in Coordinated Universal Time (UTC) when the site will start encoding official observations in the METAR format are displayed. In version 2.4 the METAR implementation date was changed to July 1, 1996, at 0800 UTC.

As was the case with the version 2.3 software load, this date and time can be changed at the SYS or TEC password level. It is available to other users for information only. They can obtain this information by using the commands REVUE-SITE-PHYS from the 1-minute screen.



Changes that Affect the Observer

ITEM	TITLE/COMMENTS	PROBLEM	SOLUTION
1	Special SAO/SPECI for hail and changes in freezing rain intensity	Required special SAO/SPECI were not generated for hail and changes in freezing rain intensity.	Requirements were added to generate a special SAO/SPECI for begin/end of hail and changes in freezing rain intensity.
2	Incorrect auto remarks	Surface and tower visibility remarks were not being displayed on the EDIT REM screen.	Surface and tower visibility remarks are now being displayed.
3	EDIT-EXIT printout does not reflect the data entered by the observer	Edited temperature, visibility, and sky values entered by the observer were not reflected correctly on the EDIT-EXIT entry printout.	Edited temperature, visibilities, and sky values are now correctly reflected on the EDIT-EXIT printout.

ITEM	TITLE/COMMENTS	PROBLEM	SOLUTION
4	Modify COR processing	The observer needs the ability to ABORT the corrected observation "COR" process.	An ABORT function is now provided in the CMD-OBS-COR menu.

Changes that Affect the Air Traffic Controller

ITEM	TITLE/COMMENTS	PROBLEM	SOLUTION
1	Special SAO/SPECI for hail and changes in freezing rain intensity	Required special SAO/SPECI were not generated for hail and changes in freezing rain intensity.	Requirements were added to generate a special SAO/SPECI for begin/end of hail and changes in freezing rain intensity.
2	Incorrect auto remarks	Surface and tower visibility remarks were not being displayed on the EDIT REM screen.	Surface and tower visibility remarks are now being displayed.

Changes that Affect Electronics Technicians

ITEM	TITLE/COMMENTS	PROBLEM	SOLUTION
1	Pressure missing after cold start.	For version 2.3 software, pressure data is missing after a cold start of ASOS. (Pressure sensor 1 failed and pressure 3 appears to be in a comms waiting state.)	Fixed by adjusting the initialization process during the cold start.
2	Runway designation modifications	New METAR FMH requirements specify the abbreviation for runway as "RWY."	ASOS now allows both "RY" and "RWY" as runway designators.

Changes that Affect Unsigned Users

The following are changes that affect unsigned users (UNS).

ITEM	TITLE/COMMENTS	PROBLEM	SOLUTION
1	Warm start problems occurred with: A: UTC dates B: Remote DAILY command.	A: Remote terminal login using (DCM) and UTC times causes a warm reboot. B: For software version 2.3 warmstarts occurred when DAILY information was requested from a remote terminal.	A: Problem was fixed by having the firmware correctly converts the UTC date/time to LST. B: Fixed by having the firmware check the appropriate file.

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